ALBERTA PRECISION LABORATORIES

Molecular Testing Summary - DL Calgary (LTR76598)

Last Updated Time: 05/04/2023 **Revision: 1.0**

Acute Pharyngitis Screen (LAB228)

Swabs are routinely processed for Group A Streptococcus (*S. pyogenes*) testing **only**, performed by loop-mediated nucleic acid amplification targeting the *spy* gene of *S. pyogenes.*

- This assay was developed and validated at the Calgary Diagnostic & Scientific Centre (DSC).
- Compared to standard culture-based detection of *S. pyogenes*, this test >99% sensitive and 95% specific.

S. pyogenes culture and susceptibility testing is performed when a history of penicillin allergy is provided.

Culture for other organisms (e.g., *A. haemolyticum*, *N. gonorrhoeae*) is performed if appropriate history provided.

***C. difficile* Test** (LAB253)

*Clostridiodes (*previously *Clostridium*) *difficile* testing is performed using a two-step algorithm:

- All samples are screened by a chemiluminescent immunoassay to detect glutamate dehydrogenase (GDH) specific for *C. difficile*. The sensitivity of this assay is >99%. If this test is negative, *C. difficile* is ruled out.
- The GDH antigen test can detect both toxigenic and non-toxigenic strains. To confirm the presence of a toxigenic *C. difficile* strain, all GDH-positive specimens are tested by real-time polymerase chain reaction test for rapid detection of toxin B gene sequences (Cepheid GeneXpert® Dx System). Positive specimens by this toxin B PCR are reported as positive. This PCR method is >99% sensitive and >93% specific.

Bacterial Enteric PCR Panel (LAB223)

Diarrheal stool specimens are routinely screened using the BD MAX™ Enteric Bacterial Panel, a commercial polymerase chain reaction (PCR) assay that tests for Shiga toxin-producing *Escherichia coli* (STEC, including O157 and non-O157), *Salmonella species, Campylobacter species, and Shigella species*.

PCR results are reported and targeted culture is performed on all PCR-positive samples. PCR-positive but culture-negative results may represent current infection, past/resolving infection, treated infection, colonization, or represent a false positive. Correlation with clinical picture is required.

Bacterial Enteric PCR Panel continued	For positive STEC results, an antigen test for Shiga toxin 1 and 2 is performed. The type of Shiga toxin detected is reported. STEC may cause hemolytic uremic syndrome (HUS) and isolates producing Shiga toxin 2 are more likely to do so. For more information and guidance on management, refer to E. coli (STEC) Info for Health Care Providers (albertahealthservices.ca). Culture for additional pathogens (*Yersinia, Vibrio*, and *Plesiomonas* species) will only be performed in specific scenarios: specific exposure (e.g., raw shellfish consumption for *Vibrio* species), immune compromise, or prolonged symptom duration (greater than 7 days). This information must be indicated on the requisition.
Stool Parasite Screen (LAB223)	Diarrheal stool specimens are routinely screened using the BD MAX™ Enteric Parasite Panel, a commercial polymerase chain reaction (PCR) assay that detects *Giardia* species, *Cryptosporidium hominis/parvum* and *Entamoeba histolytica*.
***Legionella* Nucleic Acid Test** (LAB880)	*Legionella* testing is performed using a two-step algorithm. All specimens are screened for *Legionella pneumophila* and other *Legionella* species by RIDA®Gene real-time Polymerase Chain Reaction (PCR). If the PCR screen is negative, then the presence of *Legionella* is ruled out. However, if the screen is positive, the specimen will be cultured for confirmation.
***Pneumocystis jirovecii* Nucleic Acid Test** (LAB906)	Testing for *Pneumocystis jirovecii* is by RIDA®Gene real time Polymerase Chain Reaction (PCR). Bronchoalveolar lavage fluid is the preferred specimen type. For BAL specimens, molecular methods are 97-99% sensitive and 90-94% specific. • Bateman et al. 2020. Diagnosing *Pneumocystis jirovecii* pneumonia: A review of current methods and novel approaches. *Medical Mycology* 58: 1010-1028 Bronchial wash, induced sputum, and ET aspirates are also accepted. However, the assay is not validated for these specimen types and test performance is not established. • Senecal et al. 2021. Non-invasive diagnosis of Pneumocystis jirovecii pneumonia: a systematic review and meta-analysis. Clinical Microbiology *and Infection.* https://doi.org/10.1016/j.cmi.2021.08.017
Malaria Nucleic Acid Test (LAB4051)	Blood specimens with appropriate clinical history are routinely screened for *Plasmodium* species (including *P. falciparum, P. vivax, P. ovale, P. malariae* and *P. knowlesi*) by loop mediated amplification (illumigene® Malaria), a nucleic acid amplification test (NAT). If this molecular screen is negative then no further testing is required. The result is reported as negative. Positive specimens by molecular screen undergo peripheral blood microscopic examination for confirmation, speciation, and determination of parasitemia.